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## PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

10/538860

PCT

NOTIFICATION OF TRANSMITTAL OF  
INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

To:  
LEANDRO ARECHEDERRA  
EXXONMOBIL CHEMICAL COMPANY  
LAW TECHNOLOGY  
PO BOX 2149  
BAYTOWN, TX 77522-2149

Date of Mailing  
(day/month/year)

04 MAR 2005

Applicant's or agent's file reference

2003B133C

## IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US03/40916

19 December 2003 (19.12.2003)

20 December 2002 (20.12.2002)

Applicant

EXXONMOBIL CHEMICAL PATENTS, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

ACKNOWLEDGED  
PATENT LEGAL ASSISTANT GROUP  
G. M. CARROLL

MAR 08 2005

☒ FYI☐ Reminder☐ File

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Name and mailing address of the IPEA/US

Mail Stop PCT, Attn: IPEA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Roberto Rábago

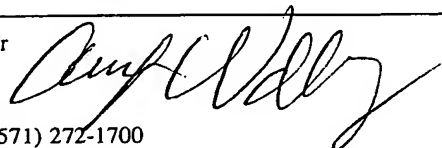
Telephone No. (571) 272-1700

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2003B133C	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/40916	International filing date ( <i>day/month/year</i> ) 19 December 2003 (19.12.2003)	Priority date ( <i>day/month/year</i> ) 20 December 2002 (20.12.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): C08F 236/02, 236/08 and US Cl.: 526/337, 339		
Applicant EXXONMOBIL CHEMICAL PATENTS, INC.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>1</u> sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		
Date of submission of the demand 16 July 2004 (16.07.2004)	Date of completion of this report 27 January 2005 (27.01.2005)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Roberto Rábago  Telephone No. (571) 272-1700	

Form PCT/IPEA/409 (cover sheet)(July 1998)

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**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed.
- ☒ the description:  
pages 1-107 as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages 108-111, 113-127 as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages NONE, filed with the demand  
pages 112, filed with the letter of 22 November 2004 (22.11.2004)
- ☒ the drawings:  
pages 1-4 as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages NONE as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>83-86, 90</u>	YES
	Claims <u>1-82, 87-89, 91-95</u>	NO
Inventive Step (IS)	Claims <u>83-86, 90</u>	YES
	Claims <u>1-82, 87-89, 91-95</u>	NO
Industrial Applicability (IA)	Claims <u>1-95</u>	YES
	Claims <u>NONE</u>	NO

**2. CITATIONS AND EXPLANATIONS**

Claims 1-82, 87-89 and 91-95 lack novelty under PCT Article 33(2) as being anticipated by each individually of Welch et al. (US 2,548,415) and Calfee et al. (US 2,534,698) as cited in the International Search Report. The reference examples set forth a copolymer of isobutylene and isoprene useful in elastomer compositions, wherein the copolymer is made using Lewis acid catalyst compositions in the presence of hydrofluorocarbon or fluorocarbon diluents. Although neither reference has measured the obscure property "F" as set forth in the formula of the claims, the reference copolymers appear to inherently contain the property "m" within the claimed ranges because they have been made using the same monomers, diluents, and class of catalysts as those described in applicants' specification. Regarding the dependent claims, the references further suggest comonomer distributions and solvent selections in both Welch '415 (col. 3, line 63 through col. 4, line 69) and Calfee '698 (col. 2, lines 10-13; col. 3, lines 15-45); increased molecular weights are disclosed in Welch '415 at col. 5, lines 43-48. It is noted that certain copolymer claims include process components within the structure of product-by-process claims; however, there is nothing in the specification or the prior art which would lead to a conclusion that these additional process components would necessarily result in any substantive differences in the claimed copolymers which would render such copolymers outside the scope of those disclosed in the applied references.

Claims 83-86 and 90 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest either halogenation of the disclosed copolymers or the making of copolymers of molecular weight in excess of 1,000,000.

Claims 1-95 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Applicants' remarks filed 22 November 2004 have been considered, but they are not persuasive. The calculation provided by applicants in an attempt to disqualify the references is clearly an estimate subject to substantial uncertainty, and therefore the final values determined for "m" cannot be considered exact. In view of the closeness of the calculated values to several of the claimed values, it appears that the reference examples are effective against the claims which recite values for "m" for a range surrounding  $m=1.1$ . Furthermore, the references are not limited to the specific results of particular working examples; rather, they are effective for a range of conditions and polymers as would be understood by those in the art. Accordingly, the highly limited scope of the analysis provided by applicants cannot reasonably be extended to cover the entire scope disclosed in the applied references. Further still, applicants have not provided sufficient details regarding their calculation to determine the appropriateness of the final results reported.

----- NEW CITATIONS -----

# PATENT COOPERATION TREATY

## PCT

### NOTE OF INFORMAL COMMUNICATION WITH THE APPLICANT

(PCT Rule 66.6)

International application No. PCT/US03/40916	Applicant's or agent's file reference 2003B133C	Date of informal communication (day/month/year) 26 October 2004 (26.10.2004)
Applicant EXXONMOBIL CHEMICAL PATENTS, INC.		

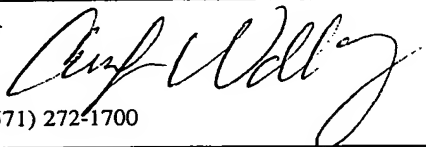
<u>Communication</u>  <input type="checkbox"/> by telephone  <input checked="" type="checkbox"/> personal	<u>Participants</u>  <input checked="" type="checkbox"/> Applicant: EXXON MOBIL CHEMICAL PATENTS, INC. <input checked="" type="checkbox"/> Agent: L. Arechederra III, Michael F. McDonald, Timothy D. Shaffer <input checked="" type="checkbox"/> Examiner(s): Roberto Rábago	<input checked="" type="checkbox"/> Identity checked	<input type="checkbox"/> authorization checked	<input type="checkbox"/> personally known
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Summary of communication:

Applicants and their representative presented an overview of the process described in the application, and further provided an analysis of the data shown in the reference examples cited in the written opinion. The examiner indicated that applicants should submit their analysis with an explanation of how it was made in a formal response to the written opinion.

☐ An extension of time limit is granted (Form PCT/IPEA/427).

☐ A copy of this note is being sent to the applicant with Form PCT/IPEA/429.  
PCT/IPEA/424.

Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Roberto Rábago  Telephone No. (571) 272-1700
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Form PCT/IPEA/428 (July 1992)

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## Replacement Page 112

35. A copolymer produced by the process comprising contacting an isoolefin, preferably isobutylene, a multiolefin, one or more Lewis acid(s), one or more initiator(s), and a diluent comprising one or more hydrofluorocarbon(s) (HFC's); the copolymer having a copolymer sequence distribution defined by:

$$F = m A / (1 + mA)^2$$

wherein  $m$  is the copolymer sequence distribution parameter;  $A$  is the molar ratio of multiolefin to isoolefin in the copolymer; and  $F$  is the isoolefin-multiolefin-multiolefin triad fraction in the copolymer; wherein  $m$  is from greater than 1.5 or  $m$  is from 1.10 to 1.25.

36. The copolymer of claim 35, wherein  $m$  is from greater than 2.0.
37. The copolymer of claim 35, wherein  $m$  is from greater than 2.5.
38. The copolymer of claim 35, wherein  $m$  is from greater than 3.5.
39. The copolymer of claim 35, wherein  $m$  is from 1.15 to 1.20.
40. The copolymer of claim 35, wherein  $m$  is from 1.15 to 1.25.
41. The copolymer of claim 35, wherein  $m$  is about 1.20.
42. The copolymer of claim 35, wherein the multiolefin is a conjugated diene, preferably isoprene.
43. The copolymer of any of claims 35-42, wherein the multiolefin content is from greater than 0.5 mol%.

AMENDED SHEET

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